Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: Ballfields Parcels at DoDHF Novato, CA

Collection Date: April 6, 2005

LDC Report Date: June 14, 2005

Matrix: Water

Parameters: Diesel Range Organics & Residual Range Organics

Validation Level: NFESC Level III & IV

Laboratory: Columbia Analytical Services, Inc.

Sample Delivery Group (SDG): K2502571

Sample Identification

TO63-R3-GW01-ER
TO63-R3-GW01
TO63-R3-GW01-Dup
TO63-R4-GW01**
TO63-R5-GW01
TO63-R2-GW01
TO63-R1-GW01
TO63-R3-GW01MS
TO63-R3-GW01MSD

**Indicates sample underwent NFESC Level IV review

Introduction

This data review covers 9 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 8015 for Diesel Range Organics and Residual Range Organics.

The review follows the Final Sampling and Analysis Plan for Preliminary Assessment/Site Investigation of Ballfields Parcels at DoDHF Novato, California, (March 23, 2005) and a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review (October 1999) as there are no current guidelines for the methods stated above.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified a P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blanks are summarized in Section III.

Field duplicates are summarized in Section XIII.

Samples indicated by a double asterisk on the front cover underwent NFESC Level IV review. NFESC Level III review was performed on all of the other samples. Raw data were not evaluated for the samples reviewed by NFESC Level III criteria since this review is based on QC data.

The following are definitions of the data qualifiers:

U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.

J Indicates an estimated value.

R Quality control indicates the data is not usable.

N Presumptive evidence of presence of the constituent.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

A Indicates the finding is based upon technical validation criteria.

P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. Calibration

a. Initial Calibration

Initial calibration of compounds was performed as required by the method.

The percent relative standard deviations (%RSD) of calibration factors for compounds were less than 20.0% .

b. Calibration Verification

Calibration verification was performed at required frequencies. The percent differences (%D) of amounts in continuing standard mixtures were within the 15.0% QC limits.

The percent difference (%D) of the second source calibration standard were less than or equal to 15.0% for all compounds.

III. Blanks

Method blanks were reviewed for each matrix as applicable. No diesel range organic or residual range organic contaminants were found in the method blanks with the following exceptions:

Method Blank ID	Extraction Date	Compound	Concentration	Associated Samples
KWG0505937-5	4/13/05	Residual range organics	33 ug/L	All samples in SDG K2502571

Sample concentrations were compared to concentrations detected in the method blanks. The sample concentrations were either not detected or were significantly greater (>5X blank contaminants) than the concentrations found in the associated method blanks with the following exceptions:

Sample	Compound	Reported Concentration	Modified Final Concentration
TO63-R3-GW01	Residual range organics	72 ug/L	110U ug/L
TO63-R3-GW01-Dup	Residual range organics	90 ug/L	100U ug/L

Sample	Compound	Reported Concentration	Modified Final Concentration
TO63-R4-GW01**	Residual range organics	110 ug/L	110U ug/L
TO63-R5-GW01	Residual range organics	52 ug/L	100U ug/L
TO63-R2-GW01	Residual range organics	160 ug/L	160U ug/L
TO63-R1-GW01	Residual range organics	49 ug/L	100U ug/L

IV. Accuracy and Precision Data

a. Surrogate Recovery

Surrogates were added to all samples and blanks as required by the method. All surrogate recoveries (%R) were within QC limits.

b. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

c. Laboratory Control Samples

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) were within QC limits.

V. Target Compound Identification

All target compound identifications were within validation criteria for samples on which a NFESC Level IV review was performed. Raw data were not evaluated for the samples reviewed by Level III criteria.

VI. Compound Quantitation and CRQLs

All compound quantitation and CRQLs were within validation criteria for samples on which a NFESC Level IV review was performed. Raw data were not evaluated for the samples reviewed by Level III criteria.

VII. System Performance

The system performance was within validation criteria for samples on which a NFESC Level IV review was performed. Raw data were not evaluated for the samples reviewed by Level III criteria.

VIII. Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

IX. Field Duplicates

Samples TO63-R3-GW01 and TO63-R3-GW01-Dup were identified as field duplicates. No diesel range organics or residual range organics were detected in any of the samples with the following exceptions:

Compound	Concentration (ug/L)		RPD
	TO63-R3-GW01	TO63-R3-GW01-Dup	
Diesel range organics	47	57	19
Residual range organics	72	90	22

X. Field Blanks

Sample TO63-R3-GW01-ER was identified as an equipment rinsate. No diesel range organic or residual range organic contaminants were found in this blank.

Ballfields Parcels at DoDHF Novato, CA
Diesel Range Organics & Residual Range Organics - Data Qualification Summary - SDG K2502571

No Sample Data Qualified in this SDG

Ballfields Parcels at DoDHF Novato, CA
Diesel Range Organics & Residual Range Organics - Laboratory Blank Data Qualification Summary - SDG K2502571

SDG	Sample	Compound	Modified Final Concentration	A or P
K2502571	TO63-R3-GW01	Residual range organics	110U ug/L	A
K2502571	TO63-R3-GW01-Dup	Residual range organics	100U ug/L	A
K2502571	TO63-R4-GW01**	Residual range organics	110U ug/L	A
K2502571	TO63-R5-GW01	Residual range organics	100U ug/L	A
K2502571	TO63-R2-GW01	Residual range organics	160U ug/L	A
K2502571	TO63-R1-GW01	Residual range organics	100U ug/L	A

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Battelle Memorial Institute
Project: Novato Ballfields/G486063
Sample Matrix: Water

Service Request: K2502571
Date Collected: 04/07/2005
Date Received: 04/08/2005

Diesel and Residual Range Organics

Sample Name: TO63-R3-GW01-ER
Lab Code: K2502571-001

Extraction Method: EPA 3510C
Analysis Method: 8015M

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Diesel Range Organics (DRO)	ND	U	53	20	1	04/13/05	04/14/05	KWG0505937	
Residual Range Organics (RRO)	ND	U	110	30	1	04/13/05	04/14/05	KWG0505937	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	83	52-128	04/14/05	Acceptable
n-Triacontane	81	50-150	04/14/05	Acceptable

4/6/10

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Battelle Memorial Institute	**Service Request:**	K2502571
Project:	Novato Ballfields/G486063	**Date Collected:**	04/07/2005
Sample Matrix:	Water	**Date Received:**	04/08/2005

Diesel and Residual Range Organics

Sample Name:	TO63-R3-GW01	**Units:**	ug/L
Lab Code:	K2502571-002	**Basis:**	NA
Extraction Method:	EPA 3510C	**Level:**	Low
Analysis Method:	8015M		

Analyte Name	Result	Q		MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Diesel Range Organics (DRO)	**47**	J		52	20	1	04/13/05	04/14/05	KWG0505937	
Residual Range Organics (RRO)	**72**	J	1/0U	110	29	1	04/13/05	04/14/05	KWG0505937	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	88	52-128	04/14/05	Acceptable
n-Triacontane	92	50-150	04/14/05	Acceptable

4/19/05

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Battelle Memorial Institute	**Service Request:**	K2502571
Project:	Novato Ballfields/G486063	**Date Collected:**	04/07/2005
Sample Matrix:	Water	**Date Received:**	04/08/2005

Diesel and Residual Range Organics

Sample Name:	TO63-R3-GW01-DUP	**Units:**	ug/L
Lab Code:	K2502571-003	**Basis:**	NA
Extraction Method:	EPA 3510C	**Level:**	Low
Analysis Method:	8015M		

Analyte Name	Result	Q		MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Diesel Range Organics (DRO)	**57**	H		50	19	1	04/13/05	04/14/05	KWG0505937	
Residual Range Organics (RRO)	**90**	J	100U	100	28	1	04/13/05	04/14/05	KWG0505937	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	82	52-128	04/14/05	Acceptable
n-Triacontane	82	50-150	04/14/05	Acceptable

6/9/05

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Battelle Memorial Institute	**Service Request:**	K2502571
Project:	Novato Ballfields/G486063	**Date Collected:**	04/07/2005
Sample Matrix:	Water	**Date Received:**	04/08/2005

Diesel and Residual Range Organics

Sample Name:	TO63-R4-GW01	**Units:**	ug/L
Lab Code:	K2502571-004	**Basis:**	NA
Extraction Method:	EPA 3510C	**Level:**	Low
Analysis Method:	8015M		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Diesel Range Organics (DRO)	**130**	Y	53	20	1	04/13/05	04/14/05	KWG0505937	
Residual Range Organics (RRO)	**110**	O	110	30	1	04/13/05	04/14/05	KWG0505937	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	83	52-128	04/14/05	Acceptable
n-Triacontane	83	50-150	04/14/05	Acceptable

6/19/05

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Battelle Memorial Institute	**Service Request:**	K2502571
Project:	Novato Ballfields/G486063	**Date Collected:**	04/07/2005
Sample Matrix:	Water	**Date Received:**	04/08/2005

Diesel and Residual Range Organics

Sample Name:	TO63-R5-GW01	**Units:**	ug/L
Lab Code:	K2502571-005	**Basis:**	NA
Extraction Method:	EPA 3510C	**Level:**	Low
Analysis Method:	8015M		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Diesel Range Organics (DRO)	**26**	J	50	19	1	04/13/05	04/14/05	KWG0505937	
Residual Range Organics (RRO)	**52**	J	100	28	1	04/13/05	04/14/05	KWG0505937	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	74	52-128	04/14/05	Acceptable
n-Triacontane	75	50-150	04/14/05	Acceptable

6/9/05

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Battelle Memorial Institute	**Service Request:**	K2502571
Project:	Novato Ballfields/G486063	**Date Collected:**	04/07/2005
Sample Matrix:	Water	**Date Received:**	04/08/2005

Diesel and Residual Range Organics

Sample Name:	TO63-R2-GW01	**Units:**	ug/L
Lab Code:	K2502571-007	**Basis:**	NA
Extraction Method:	EPA 3510C	**Level:**	Low
Analysis Method:	8015M		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Diesel Range Organics (DRO)	**140**	Y	50	19	1	04/13/05	04/14/05	KWG0505937	
Residual Range Organics (RRO)	**160**	O U	100	28	1	04/13/05	04/14/05	KWG0505937	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	81	52-128	04/14/05	Acceptable
n-Triacontane	79	50-150	04/14/05	Acceptable

6/19/05

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Battelle Memorial Institute
Project: Novato Ballfields/G486063
Sample Matrix: Water

Service Request: K2502571
Date Collected: 04/07/2005
Date Received: 04/08/2005

Diesel and Residual Range Organics

Sample Name: TO63-R1-GW01
Lab Code: K2502571-008

Extraction Method: EPA 3510C
Analysis Method: 8015M

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Diesel Range Organics (DRO)	ND	U	50	19	1	04/13/05	04/14/05	KWG0505937	
Residual Range Organics (RRO)	**49**	J	100	28	1	04/13/05	04/14/05	KWG0505937	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	67	52-128	04/14/05	Acceptable
n-Triacontane	68	50-150	04/14/05	Acceptable

6/19/05

Comments:

LDC #: 13575D8
SDG #: K2502571
Laboratory: Columbia Analytical Services

VALIDATION COMPLETENESS WORKSHEET
Level III/IV

Date: 5/13/05
Page: 1 of 1
Reviewer:
2nd Reviewer:

METHOD: GC Diesel Range Organics & Residual Range Organics (EPA SW 846 Method 8015)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 4/6/05
IIa.	Initial calibration	A	
IIb.	Calibration verification	A	70D & ICV
III.	Blanks	SW	
IVa.	Surrogate recovery	A	
IVb.	Matrix spike/Matrix spike duplicates	A	
IVc.	Laboratory control samples	A	LCS
V.	Target compound identification	A	Not reviewed for Level III validation.
VI.	Compound Quantitation and CRQLs	A	Not reviewed for Level III validation.
VII.	System Performance	A	Not reviewed for Level III validation.
VIII.	Overall assessment of data	A	
IX.	Field duplicates	SW	D = 2+3
X.	Field blanks	ND	ER = 1

Note: A = Acceptable
N = Not provided/applicable
SW = See worksheet

ND = No compounds detected
R = Rinsate
FB = Field blank

D = Duplicate
TB = Trip blank
EB = Equipment blank

Validated Samples: ** Indicates sample underwent Level IV validation

MH 5/13/05

1	TO63-R3-GW01-ER	11	KWG0505937-4	21		31	
2	TO63-R3-GW01	12		22		32	
3	TO63-R3-GW01-Dup	13		23		33	
4	TO63-R4-GW01**	14		24		34	
5	TO63-R5-GW01	15		25		35	
6	TO63-R2-GW01	16		26		36	
7	TO63-R1-GW01	17		27		37	
8	TO63-R3-GW01MS	18		28		38	
9	TO63-R3-GW01MSD	19		29		39	
10		20		30		40	

Notes: _____

LDC #: 13575D8
SDG #: K2502571

VALIDATION FINDINGS CHECKLIST

Reviewer: 9
2nd Reviewer: 9

Method: ✓ GC _____ HPLC

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
All technical holding times were met.	✓			
Cooler temperature criteria was met.	✓			
II. Initial calibration				
Did the laboratory perform a 5 point calibration prior to sample analysis?	✓			
Was a linear fit used for evaluation? If yes, were all percent relative standard deviations (%RSD) ≤ 20%?	✓			
Was a curve fit used for evaluation? If Yes, what was the acceptance criteria used?		✓		
Did the initial calibration meet the curve fit acceptance criteria?			✓	
Were the RT windows properly established?	✓			
IV. Continuing calibration				
What type of continuing calibration calculation was performed? ✓ %D or %R	✓			
Was a continuing calibration analyzed daily?	✓			
Were all percent differences (%D) ≤ 15%.0 or percent recoveries 85-115%?	✓			
Were all the retention times within the acceptance windows?	✓			
V. Blanks				
Was a method blank associated with every sample in this SDG?	✓			
Was a method blank analyzed for each matrix and concentration?	✓			
Was there contamination in the method blanks? If yes, please see the Blanks validation completeness worksheet.	✓			
VI. Surrogate spikes				
Were all surrogate %R within the QC limits?	✓			
If the percent recovery (%R) of one or more surrogates was outside QC limits, was a reanalysis performed to confirm %R?			✓	
If any %R was less than 10 percent, was a reanalysis performed to confirm %R?			✓	
VII. Matrix spike/Matrix spike duplicates				
Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD. Soil / Water.	✓			
Was a MS/MSD analyzed every 20 samples of each matrix?	✓			
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?	✓			
VIII. Laboratory control samples				
Was an LCS analyzed for this SDG?	✓			
Was an LCS analyzed per extraction batch?	✓			

LDC #: 13575O8
SDG #: K2502571

VALIDATION FINDINGS CHECKLIST

Reviewer: 9
2nd Reviewer: 9

Validation Area	Yes	No	NA	Findings/Comments
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?	✓			
IX. Regional Quality Assurance and Quality Control				
Were performance evaluation (PE) samples performed?		✓		
Were the performance evaluation (PE) samples within the acceptance limits?			✓	
X. Target compound identification				
Were the retention times of reported detects within the RT windows?	✓			
XI. Compound quantitation/CRQLs				
Were compound quantitation and CRQLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	✓			
XII. System performance				
System performance was found to be acceptable.	✓			
XIII. Overall assessment of data				
Overall assessment of data was found to be acceptable.	✓			
XIV. Field duplicates				
Were field duplicate pairs identified in this SDG?	✓			
Were target compounds idetected in the field duplicates?	✓			
XV. Field blanks				
Were field blanks identified in this SDG?	✓			
Were target compounds detected in the field blanks?		✓		

LDC #: 13553D8
SDG #: K25025T1

VALIDATION FINDINGS WORKSHEET
Blanks

Page: 1 of 1
Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: ✓ GC ___ HPLC

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Were all samples associated with a given method blank?
Y N N/A Was a method blank performed for each matrix and whenever a sample extraction procedure was performed?
Y N N/A Was a method blank performed with each extraction batch?
Y N N/A Were any contaminants found in the method blanks? If yes, please see findings below.

Level IV/D Only

Y N N/A (Gasoline and aromatics only)Was a method blank analyzed with each 24 hour batch?
Y N N/A Was a method blank analyzed for each analytical / extraction batch of ≤20 samples?

Blank extraction date: 4/13/05 **Blank analysis date:** 4/14/05 **Associated samples:** ALL

Conc. units: ug/L

Compound	Blank ID	Sample Identification						
	LWG050593T-5	2	3	4	5	6	7	
RRO	33	72/110U	90/100U	110/U	52/100U	160/U	49/100U	

Blank extraction date: _____ **Blank analysis date:** _____ **Associated samples:** _____

Conc. units: _____

Compound	Blank ID	Sample Identification						

ALL CIRCLED RESULTS WERE NOT QUALIFIED. ALL RESULTS NOT CIRCLED WERE QUALIFIED BY THE FOLLOWING STATEMENT:
All contaminants within five times the method blank concentration were qualified as not detected, "U".

LDC #: 35508
SDG #: K25025T1

VALIDATION FINDINGS WORKSHEET
Field Duplicates

Page: 1 of 1
Reviewer: [illegible]
2nd reviewer: [illegible]

METHOD: √ GC __ HPLC

(Y) N N/A Were field duplicate pairs identified in this SDG?
(Y) N N/A Were target compounds detected in the field duplicate pairs?

Compound	Concentration (µg/L)		%RPD	Qualification
	2	3	Limit ≤____	Parent only / All Samples
DRO	4T	5T	19	
RRO	72	90	22	

Compound	Concentration ( )		%RPD	Qualification
			Limit ≤____	Parent only / All Samples

FLDUPNew.wpd

LDC #: 13570 40
SDG #: K25025 (81

VALIDATION FINDINGS WORKSHEET
Initial Calibration Calculation Verification

Reviewer: 9
2nd Reviewer: 9

METHOD: GC ✓ HPLC _____

The calibration Factor (CF), average CF, and percent relative standard deviation (%RSD) were recalculated for the compounds identified below using the following calculations:

CF = A/C
average CF = sum of the CF/number of standards
%RSD = 100 * (S/X)

A = Area of compound
C = Concentration of compound,
S = Standard deviation of the CF
X = Mean of the CFs

#	Standard ID	Calibration Date	Compound	Reported CF (1000 std)	Recalculated CF (1000 std)	Reported Average CF (initial)	Recalculated Average CF (initial)	Reported %RSD	Recalculated %RSD
1	IAL	4/10/05	~~DRO~~ RRR	17000	17000	16300	16300	4.7	4.7
2									
3									
4									

Comments: Refer to Initial Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 13575D40
SDG #: K50257!

VALIDATION FINDINGS WORKSHEET
Continuing Calibration Results Verification

Reviewer: 9
2nd Reviewer: 2

METHOD: GC ✓ HPLC _____

The percent difference (%D) of the initial calibration average Calibration Factors (CF) and the continuing calibration CF were recalculated for the compounds identified below using the following calculation:

% Difference = 100 * (ave. CF - CF)/ave. CF
CF = A/C

Where: ave. CF = initial calibration average CF
CF = continuing calibration CF
A = Area of compound
C = Concentration of compound

#	Standard ID	Calibration Date	Compound	Average CF(Ical)/ CCV Conc.	Reported CF/Conc. CCV	Recalculated CF/Conc. CCV	Reported %D	Recalculated %D
1	0413F12)	4/14/05	RRO	16300	14200	14200	13	13
2	0414F003	4/14/05	RRO	16300	15600	15600	5	4
3								
4								

Comments: Refer to Continuing Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 13578D8
SDG #: K50257

VALIDATION FINDINGS WORKSHEET
Surrogate Results Verification

Page: 1 of 1
Reviewer: a
2nd reviewer: R

METHOD: ✓ GC ___ HPLC

The percent recoveries (%R) of surrogates were recalculated for the compounds identified below using the following calculation:

% Recovery: SF/SS * 100

Where: SF = Surrogate Found
SS = Surrogate Spiked

Sample ID: 4

Surrogate	Column/Detector	Surrogate Spiked	Surrogate Found	Percent Recovery	Percent Recovery	Percent Difference
				Reported	Recalculated	
o-Terphenyl	RTX-1	50	41.72	83	83	0
n-Tricontane	✓	✓	41.55	83	83	0

Sample ID: _____

Surrogate	Column/Detector	Surrogate Spiked	Surrogate Found	Percent Recovery	Percent Recovery	Percent Difference
				Reported	Recalculated	

Sample ID: _____

Surrogate	Column/Detector	Surrogate Spiked	Surrogate Found	Percent Recovery	Percent Recovery	Percent Difference
				Reported	Recalculated	

LDC #: 175T5040
SDG #: 405035T5

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates Results Verification

METHOD: ✓ GC ___HPLC

The percent recoveries (%R) and relative percent differences (RPD) of the matrix spike and matrix spike duplicate were recalculated for the compounds identified below using the following calculation:

%Recovery = 100 * (SSC - SC)/SA Where SSC = Spiked sample concentration SC = Sample concentration
SA = Spike added
RPD =(({SSCMS - SSCMSD} * 2) / (SSCMS + SSCMSD))*100 MS = Matrix spike MSD = Matrix spike duplicate

MS/MSD samples: 8/9

Compound	Spike Added (ug/L)		Sample Conc. (ug/L)	Spike Sample Concentration (ug/L)		Matrix spike Percent Recovery		Matrix Spike Duplicate Percent Recovery		MS/MSD RPD	
	MS	MSD	---	MS	MSD	Reported	Recalc.	Reported	Recalc.	Reported	Recalc.
Gasoline (8015)											
Diesel (8015)	3200	3480	47	2790	2820	86	~~86~~	80	80	1	1
Benzene (8021B)											
Methane (RSK-175)											
2,4-D (8151)											
Dinoseb (8151)											
Naphthalene (8310)											
Anthracene (8310)											
HMX (8330)											
2,4,6-Trinitrotoluene (8330)											

Comments: Refer to Matrix Spike/Matrix Spike Duplicates findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 135T5040
SDG #: KX5025T1

VALIDATION FINDINGS WORKSHEET
Laboratory Control Sample/Laboratory Control Sample Duplicates Results Verification

_____METHOD: __✓__ GC ___HPLC

The percent recoveries (%R) and relative percent differences (RPD) of the laboratory control sample and laboratory control sample duplicate were recalculated for the compounds identified below using the following calculation:

%Recovery = 100 * (SSC - SC)/SA

Where SSC = Spiked sample concentration; SA = Spike added; SC = Sample concentration; LCS = Laboratory Control Sample; LCSD = Laboratory Control Sample duplicate

RPD =(({SSCLCS - SSCLCSD} * 2) / (SSCLCS + SSCLCSD))*100

LCS/LCSD samples: KW5050593T-4

Compound	Spike Added (µg/L)		Sample Conc. (µg/L)	Spike Sample Concentration (µg/L)		LCS Percent Recovery		LCSD Percent Recovery		LCS/LCSD RPD	
	LCS	LCSD	---	LCS	LCSD	Reported	Recalc.	Reported	Recalc.	Reported	Recalc.
Gasoline (8015)											
Diesel (8015)	1600	NA	-	1710	NA	107	107				
Benzene (8021B)											
Methane (RSK-175)											
2,4-D (8151)											
Dinoseb (8151)											
Naphthalene (8310)											
Anthracene (8310)											
HMX (8330)											
2,4,6-Trinitrotoluene (8330)											

Comments: Refer to Laboratory Control Sample/Laboratory Control Sample Duplicate findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 135T5D40
SDG #: KX5025T1

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Page: 1 of 1
Reviewer: 9
2nd Reviewer: 2

METHOD: ✓ GC __ HPLC

Y N N/A Were all reported results recalculated and verified for all level IV samples?
Y N N/A Were all recalculated results for detected target compounds agree within 10% of the reported results?

Concentration= $\frac{(A)(Fv)(Df)}{(RF)(Vs \text{ or } Ws)(\%S/100)}$

A= Area or height of the compound to be measured
Fv= Final Volume of extract
Df= Dilution Factor
RF= Average response factor of the compound in the initial calibration
Vs= Initial volume of the sample
Ws= Initial weight of the sample
%S= Percent Solid

Example:

Sample ID. 4 Compound Name RRO

Concentration = $\frac{(874134)(1)(1)}{(16300)(0.480)}$

$= 111.7 \mu g/L$

#	Sample ID	Compound	Reported Concentrations ( )	Recalculated Results Concentrations ( )	Qualifications

Comments: _____

SAMPCALew.wpd